

CLAIMS

We claim:

- 5 1. A method for managing a battery system comprising:
 using a solid state relay as a switch during an operation of said battery system.
2. The method of claim 1 wherein said solid state relay is an optically
 isolated field-effect transistor.
- 10 3. The method of claim 1 wherein said operation is a read and wherein said
 switch completes a circuit comprising:
 a side of a battery cell; and
 an input of a voltage differentiator.
- 15 4. The method of claim 1 wherein said operation is a buck and wherein said
 switch completes a circuit comprising:
 a first side of a battery cell;
 a resistor; and
20 a second side of a battery cell.
5. The method of claim 1 wherein said operation is a boost and wherein said
 switch completes a circuit comprising:
 a side of a battery cell; and
25 a voltage source.

6. The method of claim 1 further comprising:
controlling said battery system using a logic circuit.

5 7. The method of claim 1 further comprising:
controlling said battery system using an EPROM.

8. The method of claim 1 further comprising:
controlling said battery system using a programmable logic array.

10

9. The method of claim 1 wherein a control circuit that controls said switch is
protected from a higher voltage circuit wherein said switch is a component of said higher
voltage circuit.

15 10. A method of managing a battery system comprising:
providing a first rail; and
providing a second rail;

11. The method of claim 10 further comprising:
20 providing a first switch connected to a high line of said first rail;
providing a second switch connected to a low line of said first rail;
providing a third switch connected to a high line of said second rail; and
providing a fourth switch connected to a low line of said second rail.

25 12. The method of claim 10 further comprising:

partitioning a first battery cell into a first battery group;
partitioning a second battery cell into a second battery group wherein said second
battery cell is in series with said first battery cell and wherein a first side of said first
battery cell is electrically connected to a first side of said second battery cell; and
5 accessing said first side of said first battery cell and a second side of said first
battery cell using said first rail.

13. The method of claim 12 further comprising:
accessing said first side of said second battery cell and a second side of said
10 second battery cell using said second rail.

14. A method of managing a battery system comprising:
partitioning a plurality of battery cells into a plurality of battery cell groups;
controlling battery management functions of a first battery cell group using a
15 battery management control module.

15. The method of claim 14 wherein said battery management control module
is controlled by a 16-bit control input.

20 16. The method of claim 14 wherein said battery management control module
is controlled by a 8-bit control input.

17. The method of claim 14 wherein four battery management control
modules are used to control battery management functions of four battery cell groups.

25

18. The method of claim 14 wherein a first battery cell group has ten battery cells.

19. A battery management system comprising:
5 a solid state relay configured to function as a switch during an operation of said battery management system.

20. The battery management system of claim 19 wherein said solid state relay is an optically isolated field-effect transistor.
10

21. The battery management system of claim 19 wherein said operation is a read and wherein said solid state relay completes a circuit comprising:
a side of a battery cell; and
an input of a voltage differentiator.

22. The battery management system of claim 19 wherein said operation is a buck and wherein said solid state relay completes a circuit comprising:
a first side of a battery cell;
a resistor; and
15 a second side of a battery cell.
20

23. The battery management system of claim 19 wherein said operation is a boost and wherein said solid state relay completes a circuit comprising:
a side of a battery cell; and
25 a voltage source.

24. The battery management system of claim 19 further comprising:
a logic circuit configured to control said battery management system.

5 25. The battery management system of claim 19 further comprising:
an EPROM configured to control said battery management system.

26. The battery management system of claim 19 further comprising:
a programmable logic array configured to control said battery management
10 system.

27. The battery management system of claim 19 further comprising:
a control circuit configured to control said solid state relay wherein said control
circuit is protected from a higher voltage circuit and wherein said solid state relay is a
15 component of said higher voltage circuit.

28. A battery management system comprising:
a first rail; and
a second rail;
20

29. The battery management system of claim 28 further comprising:
a first switch connected to a high line of said first rail;
a second switch connected to a low line of said first rail;
a third switch connected to a high line of said second rail; and
25 a fourth switch connected to a low line of said second rail.

30. The battery management system of claim 28 further comprising:
a partitioning unit configured to partition a first battery cell into a first battery
group wherein said partitioning unit is further configured to partition a second battery cell
5 into a second battery group wherein said second battery cell is in series with said first
battery cell and wherein a first side of said first battery cell is electrically connected to a
first side of said second battery cell; and
a control unit configured to access said first side of said first battery cell and a
second side of said first battery cell using said first rail.

10

31. The battery management system of claim 30 further comprising:
a second control configured to access said first side of said second battery cell and
a second side of said second battery cell using said second rail.

15

32. A battery management system comprising:
a partitioning unit configured to partition a plurality of battery cells into a plurality
of battery cell groups;
a control unit configured to control battery management functions of a first battery
cell group using a battery management control module.

20

33. The battery management system of claim 32 wherein said battery
management control module is controlled by a 16-bit control input.

34. The battery management system of claim 32 wherein said battery
25 management control module is controlled by a 8-bit control input.

35. The battery management system of claim 32 wherein four battery management control modules are used to control battery management functions of four battery cell groups.

5

36. The battery management system of claim 32 wherein a first battery cell group has ten battery cells.

10